EFFECT OF PRESORTING ON THE NUMBER OF CUSTOMERS IN MULTICLASS QUEUES WITH DEDICATED SERVERS AND A GLOBAL FCFS SERVICE DISCIPLINE

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A continuous-time queueing system with two different types of customers with two dedicated servers is examined. The goal is to study the effect of presorting on the number of customers in the system with a global first-come-first-served (FCFS) service discipline. This means that all arriving customers are accommodated in one single FCFS, regardless of their types, with an exception of the first N customers. For the first N customers the FCFS rule holds only within the types, i.e., customers of different types can overtake each other in order to be served. The motivation for this work comes from traffic and is to be able to give advise about the optimal length of filter lanes, i.e., lanes reserved for vehicles making a specific turn at a junction.